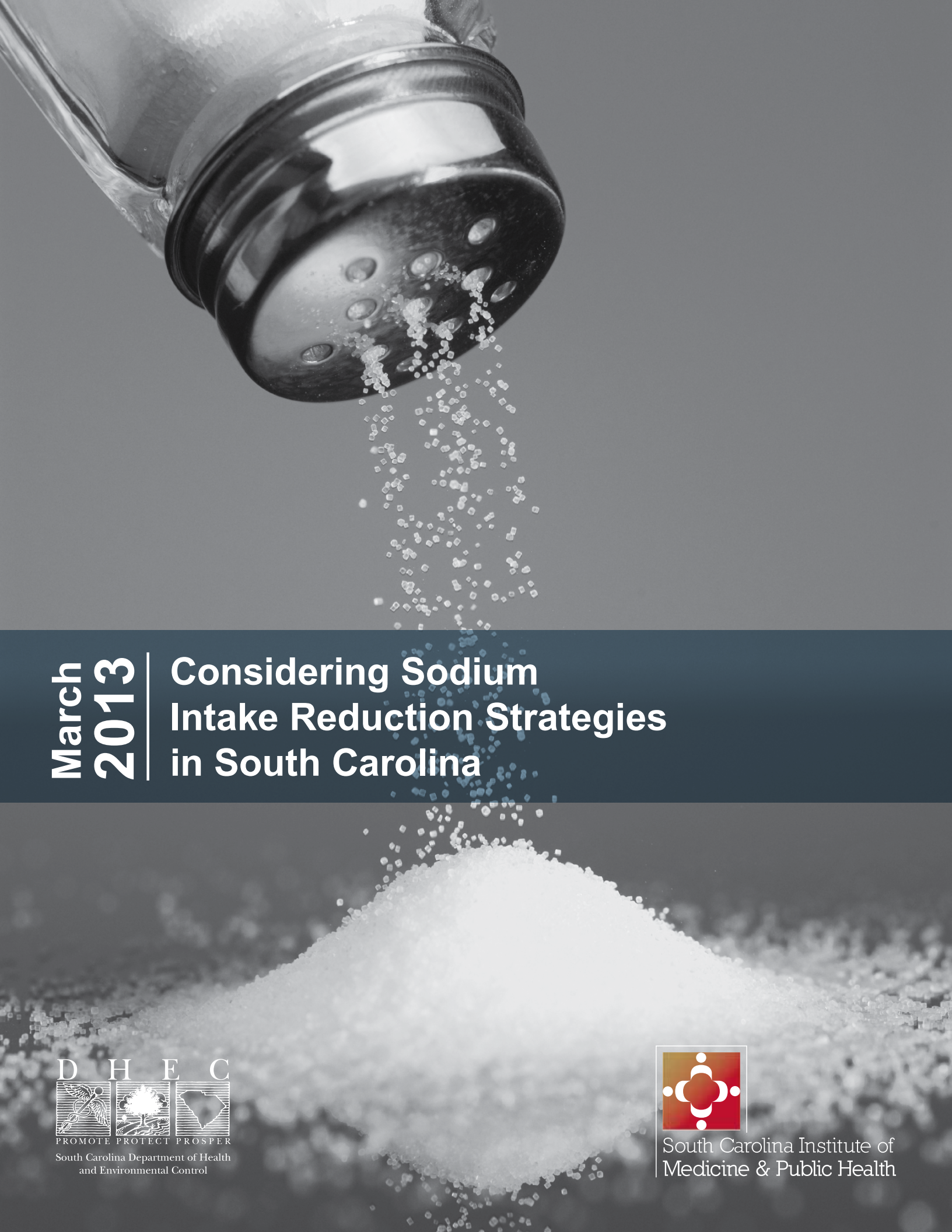
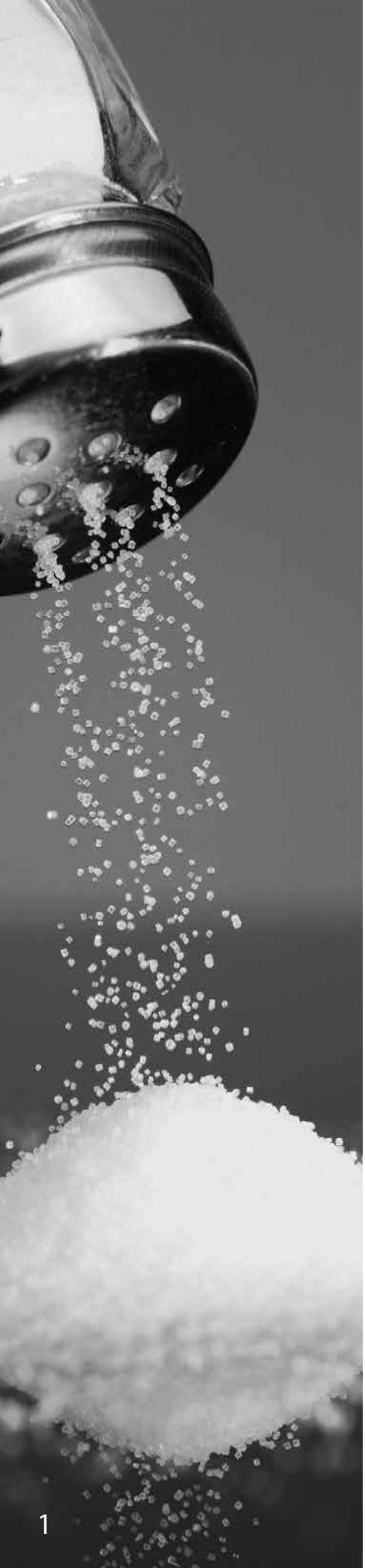


March 2013

Considering Sodium Intake Reduction Strategies in South Carolina

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

South Carolina Institute of Medicine & Public Health



MOVERS & SHAKERS

Sodium Intake Reduction Advisory Committee

Goal Statement

The Movers & Shakers conduct analysis of evidence–based strategies and resources for population sodium intake reduction. Led by the South Carolina Department of Health and Environmental Control (SC DHEC), in partnership with local and statewide stakeholders and the South Carolina Institute of Medicine and Public Health, the Movers & Shakers will: 1) increase awareness of the relationship between sodium intake and high blood pressure (a risk factor for stroke and heart disease); and 2) outline potential opportunities, barriers, and strategies to reducing sodium intake in South Carolina.

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WHY SODIUM REDUCTION?

935,000 Heart Attacks
795,000 Strokes
Per year in the U.S.

Heart disease and stroke are the leading causes of death in the United States. The Centers for Disease Control and Prevention (CDC) reports about 935,000 heart attacks and 795,000 strokes per year in the U.S. (Centers for Disease Control and Prevention [CDC], 2010a). The risk of heart disease and stroke is increased in individuals with high blood pressure/hypertension, high cholesterol levels, and those who smoke. Recent reports from the CDC find that high blood pressure contributes to about 1,000 deaths a year by escalating risks of heart disease and stroke (Viebeck, 2012). Mortality due to heart disease and stroke is disproportionately higher in the African American community.

The basics of heart disease and stroke prevention are defined by the "ABCS," which include aspirin therapy, blood pressure control, cholesterol control, and smoking cessation (CDC, 2010a). Ingesting too much sodium can lead to a multitude of health problems, including hypertension, cardiovascular disease, and stroke; reducing salt intake is an important component to creating healthier eating habits and can lower blood pressure, which can lead to a decrease in the risk for hypertension (CDC, 2009a).

The Institute of Medicine (IOM, 2010) reports that consuming excessive amounts of sodium is strongly associated with high blood pressure, which relates to an increased risk of cardiovascular disease and stroke. Consuming large amounts of sodium not only increase the risk of hypertension for adults, but it also increases the risk of hypertension in children (Yang et al, 2012). An increase in salt intake leads to an increase in blood pressure, which leads to an increased risk of heart attack and stroke (New York City Department of Health and Mental Hygiene, 2011). In the United States, half of all adults consume more than twice the daily recommended level for sodium (Angell and Farley, 2012). Sixty-five percent of sodium consumed in this country is from the food that is sold in the grocery store, and 25 percent of sodium we consume is from food that is served in restaurants (CDC, 2012).

There is clear evidence that a low sodium diet supports heart health. A study conducted by the National Heart, Lung, and Blood Institute (part of the U.S. National Institutes of Health) and Harvard Medical School demonstrated that a decrease in sodium intake dramatically lowered systolic and diastolic blood pressure. By decreasing sodium consumption from 140 mmol per day to 100 mmol per day, a decrease in blood pressure and hypertension can be seen (Sacks et al, 2001). Another study demonstrated that restricting sodium intake to 1.8g per day can result in an average decrease in systolic blood pressure by 5 mmHg (or millimeters of mercury) in those who have hypertension and an average decrease of 2.02 mmHg in systolic readings in patients without hypertension (Padwal, 2005).

The Arnold School of Public Health at the University of South Carolina conducted a study of over 6,000 people, predominantly Caucasian adults ranging from ages twenty to eighty years old, that looked at the incidence of high blood pressure among family members. The study found that those who have a parent with high blood pressure can reduce their risk by 34 percent by engaging in high levels of fitness. Everyone studied (those with parents that have high blood pressure and those that do not) reduced their risk of hypertension by 42 percent by participating in high levels of fitness (ASPH, 2012). The CDC reports that almost one-third of adults in the U.S. have hypertension and another third are on their way to being hypertensive. For children, if they experience high blood pressure during their childhood, they are more inclined to develop hypertension when they become adults. Also, they will be at a higher risk for developing cardiovascular disease (Yang et al, 2012). As of 2002, 10 percent of American children were pre-hypertensive, with African American and Mexican children having the highest risk (American Heart Association [AHA], 2012). In South Carolina, the average hypertension rate between 2005 and 2009 for adults was 31.5 percent (Behavioral Risk Factor Surveillance System [BRFSS], 2005-2009).

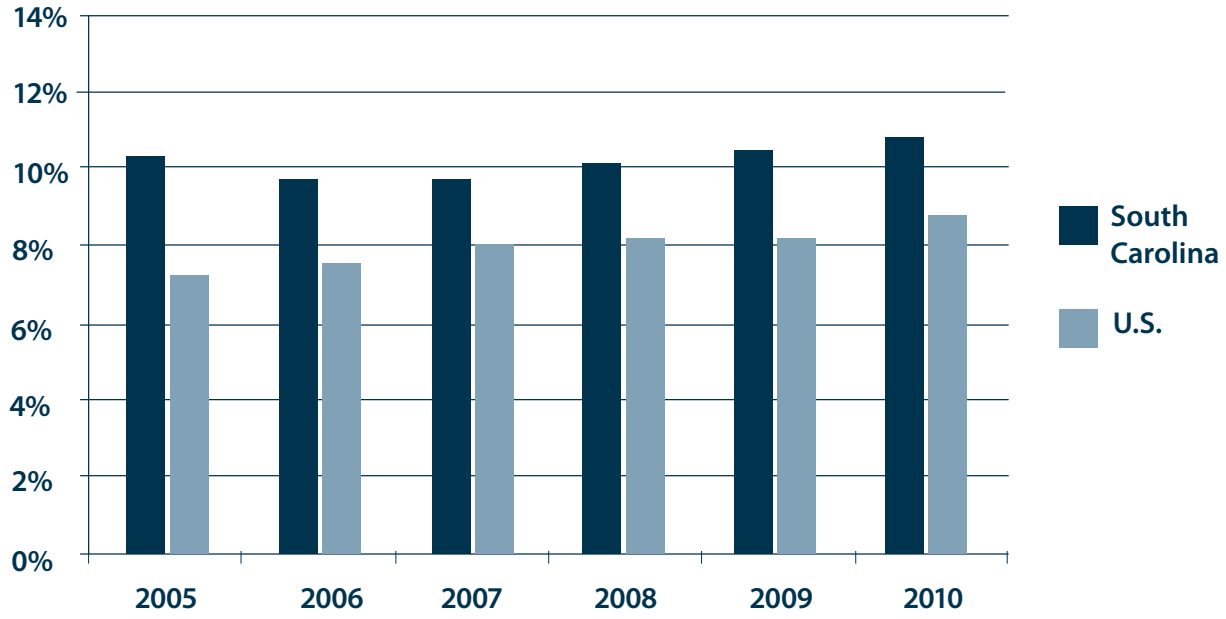
A report by Angell and Farley (2012) stated that only one-tenth of sodium in food is added during cooking or after it has been served. Seventy-seven percent is already in packaged or restaurant food at time of purchase (Angell and Farley, 2012). A recent CDC Vital Signs report indicates that more than 40 percent of the sodium we consume comes from only ten different foods. These include bread/rolls, cold cuts/cured meats, pizza, poultry, soup, sandwiches, cheese, pasta dishes, meat dishes, and snacks. The CDC projects that by reducing the sodium in these ten food sources by 25 percent, dietary sodium level would be reduced by more than 10 percent (CDC, 2012). Even the smallest effort to reduce sodium intake and blood pressure can reduce fatalities due to stroke and cardiovascular disease. Statistics show that reducing sodium intake could reduce hypertension cases by 11 million nationally; this could save approximately $18 billion in health care costs (CDC, 2009a).

THE CONTEXT AND NEED FOR SODIUM REDUCTION INITIATIVES IN SOUTH CAROLINA

Sodium intake reduction is an important step in reducing the risk of heart disease, stroke, and hypertension. The need for sodium intake reduction initiatives in South Carolina is evident in reviewing the burden of morbidity and mortality related to heart disease and stroke (please see Appendix B). In South Carolina, heart disease is a leading killer for men and women in all racial groups (SCHA, 2010a). In general, two-thirds of individuals with diabetes die from heart disease or stroke, and in South Carolina, one out of every ten adults has diabetes (South Carolina Department of Health and Environmental Control [SC DHEC], 2009c). Chart 1 depicts the rise in the percentage of adults with diabetes over the last six years in South Carolina and the U.S.

Also important to note is that **70 percent of adults in South Carolina with diabetes also have high blood pressure** (SC DHEC, 2009a). South Carolina's proportion of adults with high blood pressure increased from 28.8 percent in 2000 to 31.7 percent in 2009 (SC DHEC, 2009b). As with diabetes, South Carolina has a higher rate of adults with high blood pressure than the national average.

Chart 1: South Carolina and U.S. Adult Diabetes Prevalence and Trend Data: 2005-2010



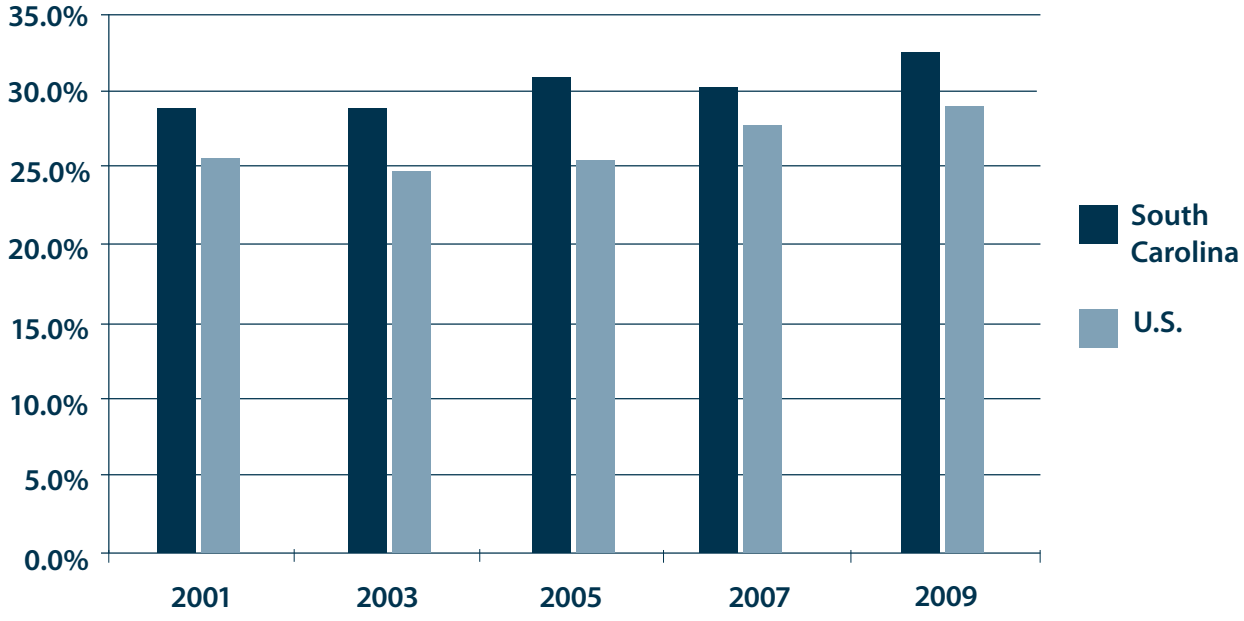
Data Source: Behavioral Risk Factor Surveillance System (BRFSS)

In 2007, South Carolina ranked 10th highest in the nation for percentage of residents with diabetes, and one in eight African Americans in South Carolina had diabetes. Additionally, South Carolina data show that African Americans have a higher proportion of adults with high blood pressure compared to the other racial groups (38.7 percent in 2009) (SC DHEC, 2009b). African Americans are 61 percent more likely than whites to die from a stroke (SC DHEC, 2009c). Overall, when compared to U.S. data, South Carolina has had a higher prevalence of high blood pressure among adults (See chart 2).

While this information supports the need for sodium intake reduction in South Carolina due to the disease burden, this picture is not complete without understanding the lack of sodium awareness; most South Carolina residents are deficient in their awareness of the excess of sodium in average daily diets. Data provided by the 2011 BRFSS show that 78.6 percent, or 4 out of 5, South Carolina adult residents surveyed (sample size of 11,000) did not know the recommended guidelines for sodium consumption. Additionally, 41 percent of respondents did not know processed food has more sodium than non-processed food.

The "Stroke Systems of Care Study Committee Report," submitted to the governor and general assembly of South Carolina by the South Carolina Department of Health and Environmental Control (SC DHEC), provides a platform for a sodium reduction initiative in our state (SC DHEC, 2010b). The report recommends supporting policies to promote stroke prevention, with the first recommendation stating, "Promote public policy which addresses reduction in sodium consumption" (SC DHEC, 2010b, p.20). This report supported the passage of the 2011 Stroke Systems of Care Act, which requires improvements in stroke care and changes in the way the health care system reacts to strokes. The legislation requires the identification of health care facilities capable of acute stroke care, establishes pre-hospital assessment procedures, standardizes Emergency Medical Services care for stroke patients, and creates a place for all stroke data to be collected and updated (SC DHEC, 2011).

Chart 2: South Carolina and U.S. Adult High Blood Pressure Prevalence and Trend Data: 2001-2009



Data Source: Behavioral Risk Factor Surveillance System (BRFSS)

SOUTH CAROLINA SUCCESS STORIES

There are many programs and initiatives around our state already working to promote healthier communities through improved nutrition. Highlighting the success of three such initiatives will help showcase that change is possible and collaborative action towards population sodium intake reduction can be successful if designated as a key public health priority.

Working Well

The Working Well initiative was first supported by Eat Smart Move More South Carolina in 2009, and in 2010 they received a three-year grant from The Duke Endowment and established a partnership with North Carolina Prevention Partners to provide support (South Carolina Hospital Association [SCHA], 2012). The initiative was established to create and implement wellness policies and promote better health in work environments. There are currently 50 hospitals, representing over 65,000 employees, that implement Working Well practices in South Carolina.

Working Well focuses on three specific pillars to aid in establishing effective wellness environments: tobacco-free people and places, access to delicious and affordable healthy food environments, and providing access and opportunity for physical activity during the work day (SCHA, 2010b). Within each pillar, there are different recognition levels with Gold representing the highest standards of excellence (Gold Star-Tobacco, Gold Apple-Nutrition, and Gold Medal-Physical Activity). In order to attain Gold level recognition, a hospital must encompass policy implementation, comprehensive system strategies, and environmental change all to create a culture where the healthy choice is the easy choice.

Specifically for nutrition, Working Well focuses on healthy food policies such as implementing nutrition criteria, providing access to healthy and affordable food choices (including cafeteria and vending), product placement, pricing strategies, nutrition labeling, and stickers at point-of-decision to educate consumers. Working Well supports hospital programming by recommending the use of evidence-based programming efforts. For example, Working Well recommends that sodium consumption guidelines be considered as part of the nutrition criteria for healthy food policies, and that sodium should be listed in the nutrition label that is seen at point-of-decision.

Among the hospitals that are a part of the Working Well program, there are currently 11 Gold Stars, 9 Gold Apples, and 4 Gold Medals. Working Well aims to increase productivity and decrease absence for hospital staff, reduce health care and health insurance costs, increase healthy competition among peers, and increase positive media awareness of healthy lifestyles (SCHA, 2010b).

Palmetto Project

The Palmetto Project was established in 1984 and consists of community leaders, academic institutions, businesses, and government agencies. As a whole, Palmetto Project strives to identify and put into action new approaches to social and economic challenges in South Carolina. With support from the Robert Wood Johnson Foundation and William Edwards Murray, the Palmetto Project created the Heart & Soul initiative in 1997, which is now the largest faith-based health initiative in the state (Palmetto Project, 2011). This initiative, which is volunteer driven and congregation centered, focuses on preventing cardiovascular disease, stroke, and kidney failure through a statewide network of African American churches. The three main objectives are: (1) decrease the risks, incidence, and complications of hypertension, diabetes, and related chronic conditions; (2) employ patient navigation and education to increase use of primary care providers for non-emergency

health services; and (3) develop a replicable patient navigation and health literacy model (Palmetto Project, 2012). The initiative provides training to volunteer teams from churches to ensure that they have the materials they need to educate, screen, and monitor their members. Included in these materials is information concerning recommended standards for blood pressure, blood glucose levels, kidney function, physical activity, and daily sodium consumption.

Several years ago, the Heart & Soul program merged with Palmetto Project's clinic-based patient navigation program. This hybrid model is delivered at food distribution sites, which are most often faith-based. The nature of the food pantry service provided is outwardly-focused, meaning that participants are very often not members of the church congregation but come from the community-at-large.

Communications with program staff indicate that an evaluation of the new Heart & Soul program demonstrated a 15 percent decrease in uninsured program participants utilizing the emergency room and a 17 percent decrease in hospital admission. Heart & Soul has just begun a three-year pilot study that will evaluate changes in knowledge, attitude, and behavior; success towards achieving healthy behavior lifestyle changes and reduced blood pressure; changes in emergency room and inpatient care utilization; and usage of medical homes.

Greenville County Schools

Greenville County Schools (GCS) have begun work to transform its cafeterias by introducing healthy menus and salad bars in 11 elementary schools in 2011-2012, 18 more in 2012-2013, and the final 21 slated for 2013-2014. Key to the transition is a "culinary training camp" at the Culinary Institute of the Carolinas at Greenville Technical College. At the training camp, cafeteria workers learn scratch cooking techniques such as roasting, use of herbs and seasonings in place of salt, and knife skills, so they can prepare foods fresh in the cafeteria rather than use highly processed foods. The curriculum was developed by chefs at the Culinary Institute of the Carolinas in partnership with GCS culinary specialist Chef Ron Jones and focuses on cooking skills, health and nutrition, and school food policy. Thus far, students have shown an average 50 percent gain in knowledge in these areas based on a pre- and post-test according to the Piedmont Health Foundation. As a result of the training, Culinary Creations schools meet the U.S. Department of Agriculture (USDA) Healthier US Schools Challenge Gold Level of Distinction.

The training program is funded by Blue Cross Blue Shield of South Carolina and the Piedmont Health Foundation, and LiveWell Greenville supports implementation by coaching school Parent Teacher Associations (PTAs), School Improvement Councils (SICs), and administration in creating an overall healthier school environment to complement the cafeteria improvements.

FEDERAL INITIATIVES TO REDUCE SODIUM INTAKE

Million Hearts Initiative

The Million Hearts Initiative was established in September 2011 and is a five-year national initiative that aims to prevent one million strokes and heart attacks that includes a component related to population sodium intake reduction. The initiative includes a number of activities. The first is a set of campaigns created to educate the public about heart disease and prevention strategies that help people take control of their health. Another set of activities will coalesce around the use of health technology to help control elevated blood pressure and cholesterol among patients who have high blood pressure and cholesterol. The adoption of new health technology will help to regulate and improve the quality of care that a patient receives. The final strategy will be to initiate community efforts that encourage smoke-free policies and decrease the amount of sodium in food (Million Hearts, 2011).

In order to reach the goal of preventing one million strokes and heart attacks, Million Hearts will bring together different stakeholders implementing various programs and policies that focus on heart health. Support for this initiative includes, but is not limited to, the U.S. Department of Health and Human Services (DHHS), the CDC, the Center for Medicare and Medicaid Services, the National Institute of Health, and the Substance Abuse and Mental Health Services Administration (Million Hearts, 2011).

The Institute of Medicine

The IOM released a report in April 2010 that outlines policy recommendations to support sodium intake reduction efforts in the United States. The IOM recommends that national initiatives for reducing sodium begin at the U.S. Food and Drug Administration (FDA) with efforts to decrease salt levels in processed foods and items sold by food service organizations. There is a need for a standard that defines safe levels of sodium in food. By creating this standard, food manufacturers, purchasers, and distributors would have to adhere to stricter regulations related to the amount of sodium in food products.

The second strategy recommended by the IOM in reducing sodium intake levels is to promote voluntary cooperation from the food industry to reduce sodium levels in food. The IOM encourages restaurants and other food producers to implement sodium reduction strategies before mandatory standards are put in place. Working to promote voluntary sodium reduction participation within the food industry, government agencies, and restaurants can aid in sodium intake reduction.

The third recommendation encourages those involved with different areas of sodium reduction to work together to encourage sodium reduction on the part of food supply companies. The initiatives created by the FDA should be implemented and tailored to fit all areas of food production, purchasing, and dissemination. This recommendation also encourages Congress to remove all exemptions for nutrition labeling and require all food organizations to follow sodium content regulations.

The fourth IOM recommendation is to increase nationwide awareness about sodium and the need for sodium intake reduction. This education will encourage individuals to change their diets in order to meet the guidelines for sodium limits.

The fifth recommendation addresses the need for continuing sodium intake reduction. Involved agencies should continue to maintain initiatives to reduce sodium and disseminate information from surveys and other forms of data collection in a manner that is accessible to the public (IOM, 2010).

National School Lunch Program

The National School Lunch Program (NSLP) is a federally supported program that was created for school children to have the ability to receive healthy lunches at school. The lunches must follow the recommendations set by the Dietary Guidelines for Americans, which includes limiting the number of calories from fat (no more than 30 percent) and saturated fat (less than 10 percent) (Food Research and Action Center, 2010). The guidelines also require lunches to provide one-third of the recommended daily allowance of protein, iron, calcium, and Vitamins A and C and include designated amounts of fruits, vegetables, meats, grains, and milk. There is no set target for sodium levels; the goal is to simply reduce the amount of salt in the foods provided to children (School Nutrition Association, 2012; USDA, 2010.)

Public and private schools can participate in NSLP, and all children in the participating schools can purchase a healthy meal. The family income level determines whether the child qualifies for free or reduced priced meals; however, even those who pay full price are still receiving the meal at a subsidized price (USDA, 2010). As part of participation in NSLP, the participating school district must implement a school wellness policy, address obesity issues, and encourage healthy eating and physical activity in school environments (Food Research and Action Center, 2010).

Menu Labeling Requirements

Menu labeling requires certain classes of restaurants with 20 or more locations and vending machine companies with 20 or more machines to display the nutritional content of the food offered (CDC, 2010b; U.S. Food and Drug Administration [FDA], 2011). The nutritional content must include the number of calories and the amount of cholesterol, sodium, saturated fats, carbohydrates, sugars, fiber, and protein per item (CDC, 2010b; FDA, 2011). Encouraging healthier decisions by making nutritional information available through menu labeling is a significant strategy for improving nutrition and controlling weight.

The 2008 Health and Diet Survey found that 54 percent of respondents read nutritional labels the first time they purchase an item. Two–thirds of respondents "often" read nutritional labels to determine the amount of calories, salt, vitamins, and fat in a food item (FDA, 2010). Research demonstrates that the consumer's inclination to eat items high in calories and fat decreases when nutritional information is made available (Robert Wood Johnson Foundation, 2009).

Food Purchasing Guidelines

The IOM (2010) reports current sodium levels in our food supply are too high to be deemed safe for consumers. The food procurement policy was created to regulate the food purchased by state and local government agencies, potentially affecting many different settings including schools, work sites, hospitals, assisted living communities, colleges/universities, and child care facilities. The policy requires that food the government purchases, provides, and/or makes available must contain nutrients deemed necessary by public health officials. While the standards may differ depending on the agency involved, there are several minimum standards outlined by DHHS (CDC, 2011a). For example, packaged fruit should be in water or unsweetened juice, vegetables should contain less than 230mg of sodium per serving, whole grains should always be offered and contain less than 230mg of sodium per serving, and at least 50 percent of all available beverages (not including 100 percent juice or unsweetened milk) may not have more than 40 calories per serving.

CDC Sodium Reduction Grants

In order to encourage sodium reduction initiatives, the CDC provided three-year grants to support the implementation of sodium reduction initiatives, such as policy strategies and increased availability of healthier food options for communities. For more information about community sodium reduction initiatives, including a list of the states and communities that received the grant, please visit the CDC's website at: http://www.cdc.gov/media/pressrel/2010/r101001.html?scid=mediarel_r101001

SODIUM REDUCTION LEGISLATION AND POLICY IN OTHER STATES

In order to develop and encourage sodium intake reduction initiatives in South Carolina, it is beneficial to look at other states successful in their strategies to promote improved nutrition for their residents.

New York

New York is a leader in sodium reduction. The state is credited with leading The National Salt Reduction Initiative (NSRI), which was established in 2008 as a guide for restaurants and food packaging companies to reduce the sodium levels in their food. Since its creation, the NSRI has developed partnerships with more than 80 national, local, and state health organizations (Angell and Farley, 2012). National food manufacturers are voluntarily complying with gradual sodium reduction benchmarks set nationally, with the goal of reducing sodium intake of Americans by 25 percent over a five-year period concluding in January 2014.

NSRI has elicited the commitment of food packaging organizations across 62 categories (cereal, canned vegetables, etc.) and restaurants across 25 categories (soup, sandwiches with lunch meat, etc.) to reduce their sodium content in their food (Johnson, 2011; New York City Department of Health and Mental Hygiene, 2011; O'Callaghan, 2010). Since July 2011, 28 companies have committed to reducing sodium in their food products. These companies include superstores, grocery stores, family owned businesses, transnational corporations, restaurant chains, and restaurant suppliers (Angell and Farley, 2012).

Massachusetts

Massachusetts has made a significant effort to reduce sodium intake by utilizing a multi-faceted approach. The approach includes a call to action for participation in sodium reduction activities, a new food purchasing policy, public information campaigns, and wellness grants. Executive Order 509 requires state agencies to comply with specific nutritional standards when buying food and beverages. The nutritional standards are based on the Dietary Guidelines for Americans and require that food have no more than 480mg of sodium per serving (Smith, 2010).

North Carolina

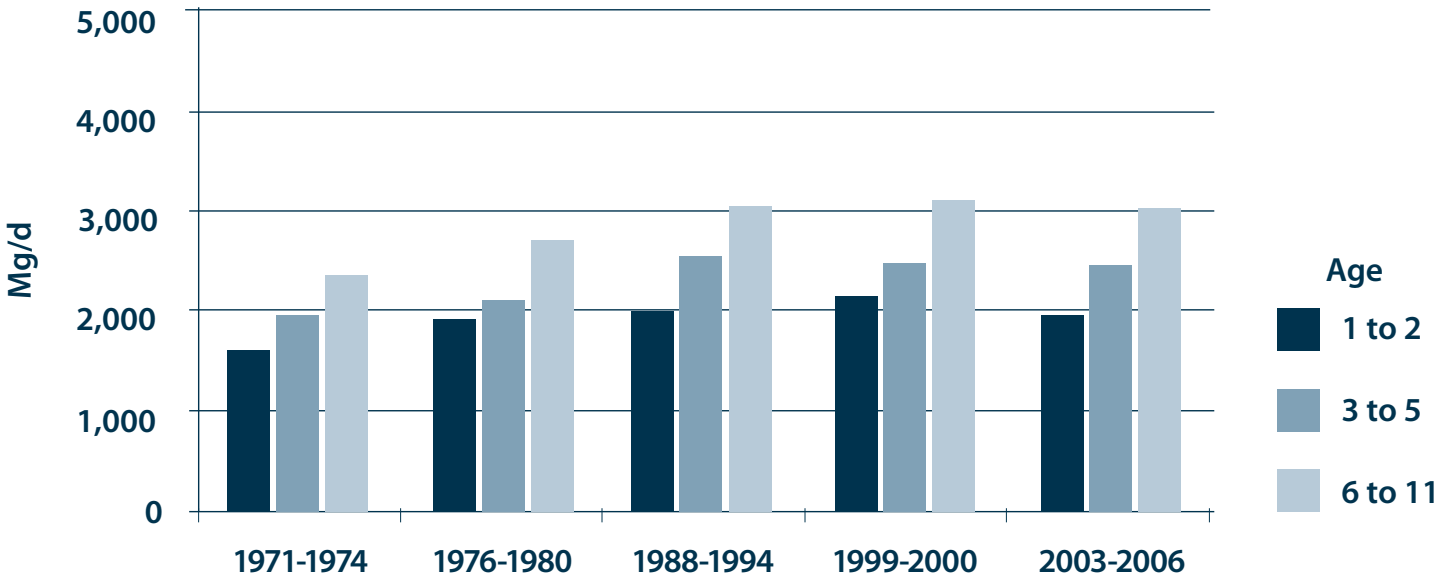
North Carolina House Resolution 670, "A Resolution Creating Awareness about the Benefits of Reducing Dietary Sodium Intake to Address a Serious Public Health Concern Related to Increased Risk of Heart Disease and Stroke" (Appendix A), was presented to the General Assembly of North Carolina and adopted in May 2011. This resolution supports initiatives that center on reducing heart disease and stroke in North Carolina by supporting efforts to reduce sodium intake (North Carolina General Assembly, 2011).

SODIUM INTAKE: RECOMMENDED GUIDELINES VERSUS POPULATION CONSUMPTION

CDC and the 2010 Dietary Guidelines for Americans recommend that adults consume no more than 2,300mg of sodium per day, and people who have one or more of the following characteristics should not consume more than 1,500mg of sodium per day: those age 51 years or older, African Americans, and people with high blood pressure, diabetes, and/or kidney disease (CDC, 2011b; CDC, 2011d; DHHS and USDA, 2010). This restriction of 1,500mg of sodium per day applies to about half of the United States population (CDC, 2011b; CDC, 2011d). The American Heart Association (AHA, 2011) suggests that since about 90 percent of people will develop high blood pressure as they age, everyone should follow the restriction of 1,500mg per day of sodium. The AHA also recommends that children consume less than 1,500mg of sodium per day.

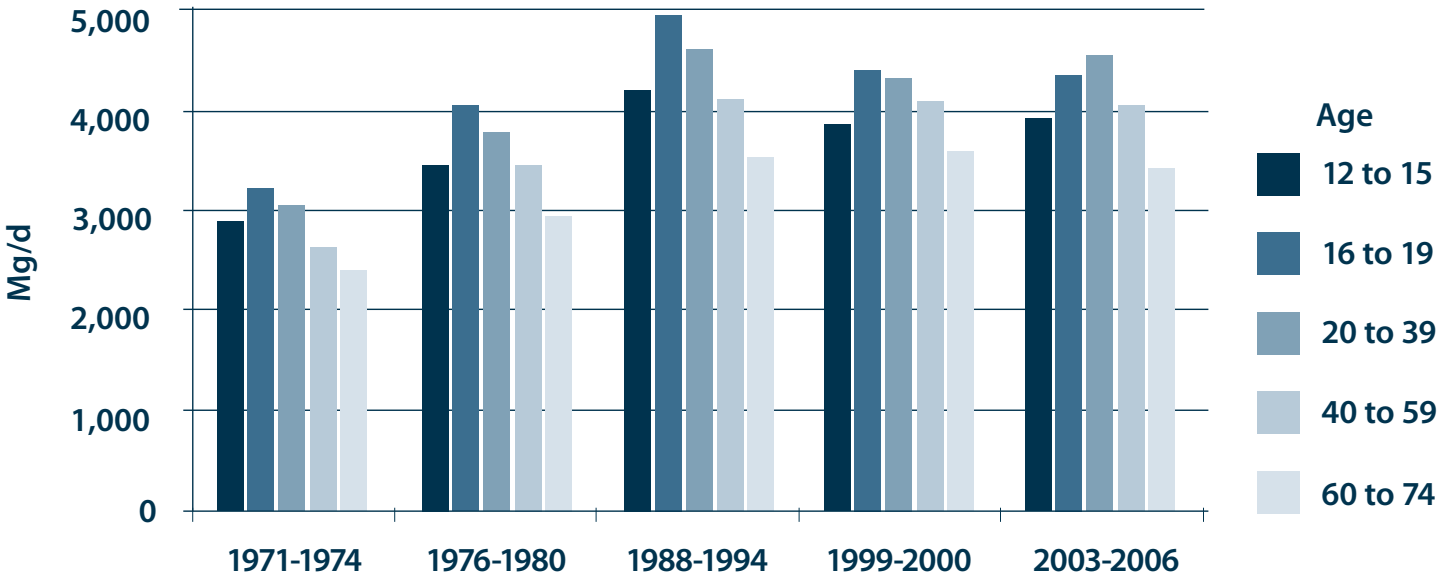
The CDC reports that, on average, Americans two years and older consume more than 3,400mg of sodium per day (CDC, 2009b). Charts 1, 2, and 3 depict the increase in sodium consumption for children, males, and females in the U.S. since 1971.

Chart 3: National Mean Daily Sodium Intake
Ages 1-11; 1971-2006



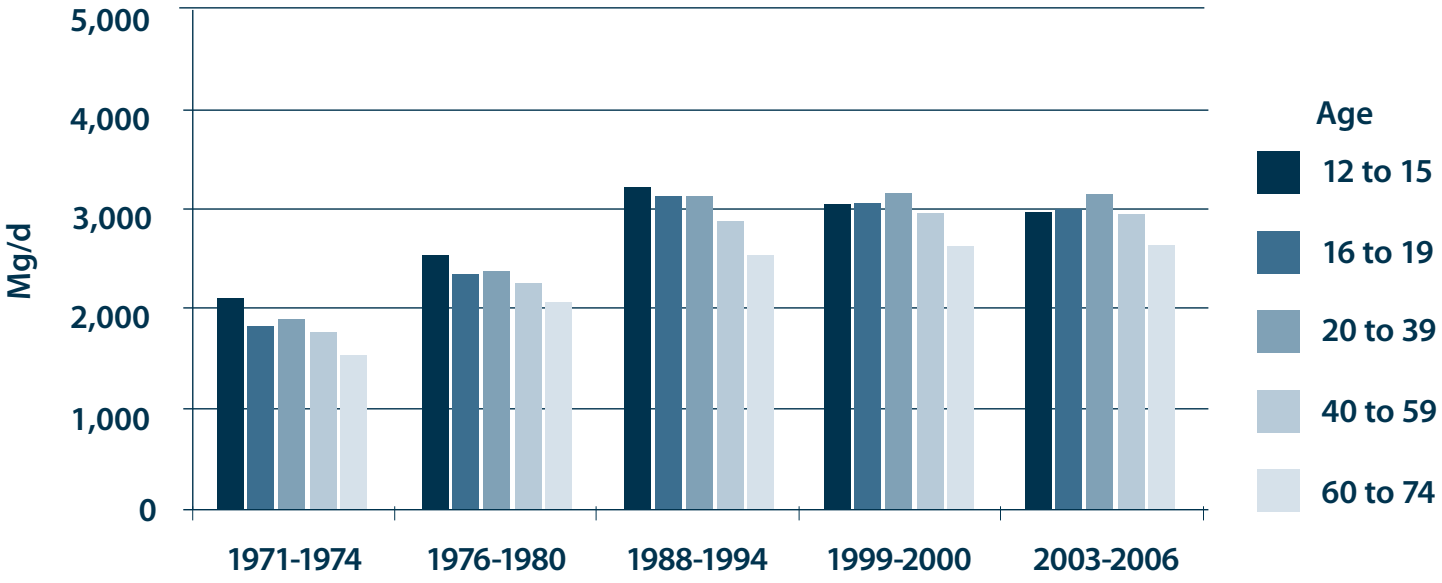
Data Source: Briefel and Johnson (2004); National Health and Nutrition Examination Survey (NHANES)

Chart 4: National Mean Daily Sodium Intake
Males Ages 12-74; 1971-2006



Data Source: Briefel and Johnson (2004); National Health and Nutrition Examination Survey (NHANES)

Chart 5: National Mean Daily Sodium Intake
Females Ages 12-74; 1971-2006



Data Source: Briefel and Johnson (2004); National Health and Nutrition Examination Survey (NHANES)

RECOMMENDED STRATEGIES TO REDUCE POPULATION SODIUM INTAKE

Individual Dietary Approaches

A change in individual dietary habits can have an impact on the amount of sodium a person ingests. A notable diet to consider is the Dietary Approach to Stop Hypertension (DASH), which has been proven to not only reduce blood pressure, but to also reduce cholesterol and insulin intake. This diet plan encourages individuals to eat fruits, vegetables, whole grains, and low or non-fat dairy products. The DASH diet design can be used in many different lifestyles and incorporates a multitude of food choices to ensure that individual food preference can be met. The diet provides meal plans, recipes, and guidance on what to select from restaurants and fast food menus. By choosing to eat healthier food, the individual is automatically reducing the amount of sodium they consume (DASH Diet, 2012).

Engaging Stakeholders

To begin development of a sodium intake reduction strategy, the CDC suggests forming a committee of interested stakeholders (CDC, 2010c). These committee members should be educated on different sodium reduction policies and participate in health impact assessments of policies. A health impact assessment is a research approach that can be used to anticipate and predict the different health effects of a proposed policy or program on a particular population, and it is also an engagement tool used to increase input of a variety of stakeholders into decisions that impact them (CDC, 2010c; CDC, 2011). Through this tool, the committee will bring attention to health issues related to sodium intake levels. Once awareness has begun and relationships have developed among government agencies, public health agencies, and other stakeholders, interventions can be designed and policies can be drafted. For example, a food purchasing policy can be established, outlining a standard for sodium levels and other nutritional indicators that must be followed by all who sell, purchase, and/or distribute food (CDC, 2010c). These standards can then be used to educate the public about sodium and its positive and negative effects.

Informing the Public

Informing and educating the public about the need for sodium intake reduction can be a challenge. One way to reach a multitude of people at once is through the utilization of mass media. The CDC has created informational videos (available online) about the need for salt intake reduction for improved health and the need to read food labels in order to facilitate healthier food choices.

Sodium Awareness and Food Quality in Schools

Another important avenue to disseminate information about sodium intake reduction is in the school system. Schools have the ability to provide healthy food and beverage choices for children and can teach children about healthy eating habits (CDC, 2011c). By maintaining and expanding the National School Lunch Program, which requires participating schools to create meals following the standards set by the Dietary Guidelines for Americans, schools could incorporate lower sodium items. The CDC article, "Under Pressure: Strategies for Sodium Reduction in the School Environment," also suggests incorporating sodium reduction education into classroom curriculums, creating and implementing nutritional standards for meals served at school, and incorporating adults connected to the students, such as teachers and parents, in sodium intake reduction campaigns (CDC, 2011c).

Encouraging healthy foods in schools can also be reinforced by providing healthy food options in vending machines. Data produced by a survey about school vending machines found that in middle-school vending machines across the nation, 73 percent of beverages choices and 83 percent of snack choices are poor in nutrition, meaning they are high in saturated fats, sodium, and refined sugars (Center for Science in the Public Interest, 2004). In high-school vending machines, 74 percent of beverage choices and 85 percent of snacks have poor nutritional content. By offering healthier food options in schools, healthy values are reinforced and students are more encouraged to lead a healthier lifestyle (Center for Science in the Public Interest, 2004).

Monitoring and Evaluating Progress

The World Health Organization (WHO) recommends that those involved in sodium reduction strategies should create and identify particular tools and/or procedures that will evaluate the success of sodium intake reduction initiatives. It is suggested that a plan be developed to monitor and evaluate policies that have been implemented to ensure that they are reaching the goals that were originally set for them (World Health Organization [WHO], 2010). Monitoring sodium reduction not only includes evaluation of policies but also monitoring the changes made in sodium intake, amount of sodium in food, sodium preferences, and consumer readiness to reduce sodium intake (IOM, 2010).

The American Heart Association recently stated that "Americans deserve the freedom to choose how much sodium they eat – and with the levels of sodium currently so high in the food supply, that choice has been taken away" (AHA, 2011).

NEXT STEPS FOR SOUTH CAROLINA

A clear need exists for sodium reduction initiatives in the state of South Carolina.

Short Term Goals

Recommended by the Movers & Shakers
Sodium Intake Reduction Advisory Committee

- Involve a wide spectrum of government agencies and other stakeholders in the planning process to ensure strong, ongoing support of sodium intake reduction.
- Continue to look to surrounding states for ideas on how to successfully implement sodium reduction initiatives.
- Introduce a resolution similar to that of North Carolina during the beginning of the next legislative session to the South Carolina General Assembly (2013).
- Encourage and educate communities on dietary approaches that improve overall nutrition and reduce sodium intake.
- Develop approaches to promote the DASH diet in a way that is acceptable to the southern palette.

Long Term Goals

Recommended by the Movers & Shakers
Sodium Intake Reduction Advisory Committee

- Develop specific recommendations for food products purchased by state agencies that include specific nutritional requirements.
- Develop legislative approaches and stronger recommendations for food products sold in the state.

APPENDIX A: North Carolina Sodium Resolution
Serious Public Health Concern Related to Increased Risk of Heart Disease and Stroke

WHEREAS, one in three American adults has high blood pressure and an estimated 99 percent of middle-aged adults will develop high blood pressure in their lifetime; and

WHEREAS, high blood pressure, also known as hypertension, is a major and modifiable risk factor for heart disease and stroke; and

WHEREAS, heart disease and stroke are the second and third leading causes of death in North Carolina; and

WHEREAS, in 2009, 31.5 percent of all North Carolina adults had been told by a healthcare provider that they had high blood pressure; and

WHEREAS, a high amount of sodium in the diet has been linked to high blood pressure which can lead to other harmful effects on health, including increased risk for stroke, heart disease, heart attack, heart failure, vision loss, and kidney disease; and

WHEREAS, the 2010 U.S. Dietary Guidelines for Americans recommends consuming less than 2,300mg of dietary sodium per day and further reducing intake to 1,500mg among persons who are 51 and older and those of any age who are African American or have hypertension, diabetes, or chronic kidney disease.

WHEREAS, Americans age 20 and older consume an average of 3,466 milligrams per day, which is about 131 percent above AHA's recommended level of 1,500 milligrams per day and far exceeds the amount needed for good health; and

WHEREAS, the American Heart Association and others in the public health community strongly recommend a more aggressive standard of less than 1,500 milligrams per day of dietary sodium intake for all Americans; and

WHEREAS, the American Heart Association advocates for a stepwise reduction of sodium in the American diet to 1,500 milligrams per day by the year 2020; and

WHEREAS, it is estimated that if the population of the United States moved to an average intake of 1,500 milligrams of sodium per day there would be a 25.6 percent overall decrease in high blood pressure and $26.2 billion in health care savings; and

WHEREAS, the Stroke Advisory Council of the Justus-Warren Heart Disease and Stroke Prevention Task Force has developed recommendations to support initiatives that advance public awareness of stroke risk factors such as high blood pressure; assist individuals in identifying their own risks; and move them to action to build healthier lifestyles, including reducing excessive sodium consumption; and

WHEREAS, the state's heart disease and stroke prevention program is planning to expand efforts to support consumers in making behavior changes to reduce sodium intake in a manner consistent with the national and AHA dietary guidelines;

Be it resolved by the House of Representatives:

SECTION 1: The House of Representatives supports measures aimed at decreasing heart disease and stroke in North Carolina and encourages the State's citizens to reduce sodium in their diets.

SECTION 2: This resolution is effective upon adoption.

APPENDIX B: South Carolina Mortality Rates for Stroke and Heart Disease

Data Source: South Carolina Community Assessment Network (SCAN) Community Profile, 2005-2009

South Carolina 2005-2009: Number of Stroke Deaths by Gender

	2005		2006		2007		2008		2009	
Gender	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate
Male	1,004	60.3	914	51.6	1,023	53.9	979	50.3	966	47.9
Female	1,444	55.9	1,370	50.4	1,437	51.1	1,408	48.4	1,420	47.8

**Age-adjusted mortality rate per 100,000 population.*

South Carolina 2005-2009: Number of Coronary Heart Disease Deaths by Gender

	2005		2006		2007		2008		2009	
Gender	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate
Male	3,325	187.9	3,297	176.0	3,142	160.9	3,204	157.5	3,337	158.9
Female	2,655	102.8	2,469	90.9	2,470	88.3	2,425	83.5	2,290	77.0

**Age-adjusted mortality rate per 100,000 population.*

South Carolina 2005-2009: Number of Stroke Deaths by Race

	2005		2006		2007		2008		2009	
Race	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate
White	1,694	52.8	1,546	45.0	1,660	46.4	1,646	44.4	1,636	42.6
African American	747	77.1	716	72.6	783	76.5	713	67.9	723	68.6
Other	7	DSU[1]	22	67.7	13	DSU[1]	17	34.1	13	DSU[1]

**Age-adjusted mortality rate per 100,000 population.*

South Carolina 2005-2009: Number of Coronary Heart Disease Deaths by Race

	2005		2006		2007		2008		2009	
Race	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate	Death Total	Mortality Rate
White	4,434	134.9	4,208	121.0	4,136	114.8	4,145	111.0	4,168	107.4
African American	1,527	157.0	1,533	152.6	1,443	139.8	1,434	133.4	1,400	129.3
Other	18	46.6	20	40.9	29	55.3	27	52.8	30	56.8

**Age-adjusted mortality rate per 100,000 population.*

[1] *Data Statistically Unreliable*

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